

FORCED IONIZATION OF THE INDOOR AIR - AN ADDITIONAL METHOD IN THE TREATMENT OF THE RESPIRATORY DISEASE IN CYSTIC FIBROSIS

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PREMISE OF THE PAPER

- The respiratory disease from CF is the main factor, which influence the prognosis.
- Setting up of an well-organized therapeutic plan appropriate to the patient's age and clinical state, is the only chance for ameliorating the prognosis of these patients.
- The daily home therapy with mucolytic substances in aerosols represents one of the compulsory steps of the treatment. RH-DNAse is the best option for this point of view.
- Unfortunately, in the countries with a low economical standard as Romania, there is a very low possibility to have access to the rh-DNAse treatment because of the very high costs.
- The concentrated NaCl solutions in aerosols as well as the courses of treatment performed in regions rich in Na ions (saline, seaside) have been beneficial for as an adjuvant in the treatment of CF.
- Starting from the favorable effect of the NaCl treatment, "*Tehno Bionic*" - Buzau, Romania planned and built the "Salin" device for the forced ionization of the indoor air.
- Principle of the method: *forced passing of the air through microcrystal salt deposit plates*. This procedure leads to changes of the air composition and quality by salt sublimation.

AIM OF THE PAPER

- The aim of this paper is to check the therapy's efficiency upon the patients with CF and chronic respiratory disease by **forced ionization of the indoor air**.

MATERIAL AND METHODS

- This study has been realized within a 6 months interval on two lots of CF children and teenagers followed up by the Centre of CF from Timisoara (Fig. 1).

Lot I

- ♦ 10 patients (4 male and 6 female) with their age between 3 and 16 years (average 10.3 years) where we applied forced ionization of the indoor air (living room, bedroom).

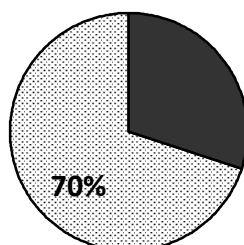
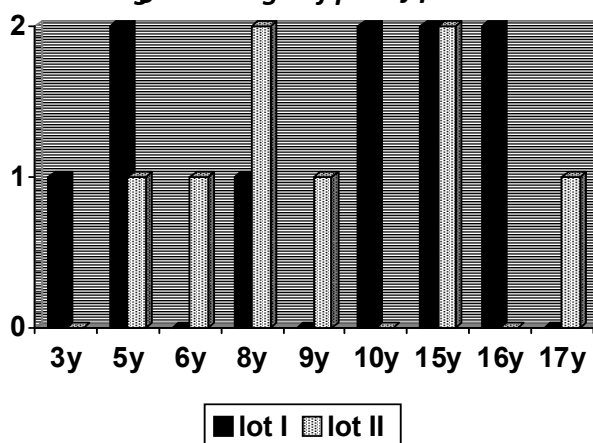
Lot II (control lot)

- ♦ 8 patients (3 male and 5 female) with their age between 5 and 17 years (average 10.3 years) where the device worked without the salt plates.
- The device worked approximately 8-10 hours/day, at 9V voltage.
- All patients followed the appropriate treatment during this period.
- The studied parameters:
 - The genera clinical state of the patient by subjective self-appreciation at the young people, respectively the parents' appreciation at the younger children;



- Clinical examination of the respiratory system;
- FEV 1 value at older children
- The selection criteria for both lots have been (Fig. 2):
 - Patients that have been seriously affected by the disease (3 from lot I, 2 from lot II);
 - Infection with Ps.ae. and/or Staphylococcus aureus
 - Bronchiectasis
 - FEV 1 < 50%
 - Patients with a favorable or mild clinical state (7 from lot I, 6 from lot II);
 - Without associated infection
 - FEV 1 > 50-60%

Fig. 2 The age of patients

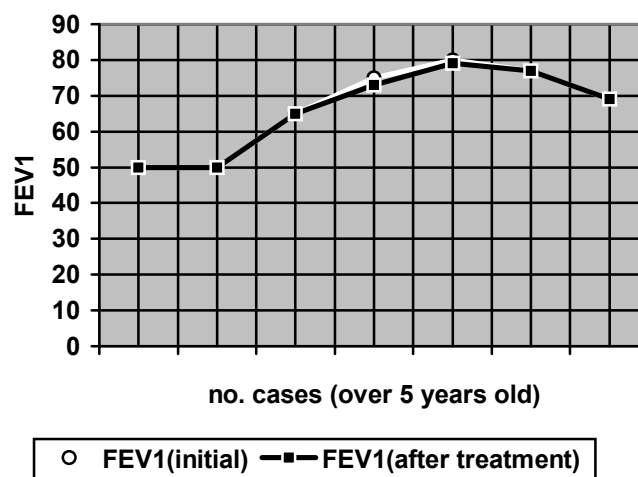
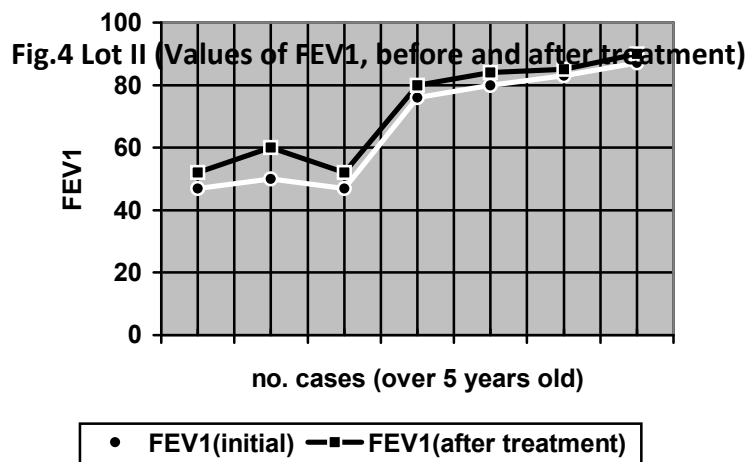


▨ favorable state ■ seriously affected

- ⊗ In **lot I** we noticed:
 - ⇒ A significant improvement of the clinical state
- The subjective estimation "for better" seen by the patients, respectively by the parents especially in those that have been more seriously affected;
- Improvement of the objective symptoms of the disease:
 - Increase of the sputum elimination within a first stage followed by a significant reducing of its quantity
 - Improvement of the respiratory functional syndrome
 - Reducing of the crackles at auscultation
 - FEV1 Improvement (Fig.3)
- ⇒ From the therapy beginning no patient showed other acute episodes of the respiratory disease that should require another hospitalization.
- ⊗ In **lot II** there were no changes similar to those from lot I (Fig. 4)



Fig. 3 Lot I (values of FEV1, before and after treatment)



CONCLUSIONS

- ⇒ Forced ionization of the indoor air by salt sublimation represents an efficient method of the respiratory disease treatment in CF.
- ⇒ The method is an adjuvant, it does not exclude classical therapy.
- ⇒ It is a natural method of therapy adapted to the living space and it does not involve any risk
- ⇒ It is a quite cheap method of therapy.

